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R E P O R T



of the

NINTH NORTHEASTERN CORN IMPROVEMENT CONFERENCE

New York City, New York
March 12-13, 1954

Reported by
Merle T. Jenkins, Secretary

Field Crops Research Branch
Plant Industry Station
Beltsville, Maryland
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REPORT OF THE NINTH NORTHEASTERN CORN IMPROVEMENT CONFERENCE

Henry Hudson Hotel
New York City
March 12-13, 1954

Reported by Merle T. Jenkins,^{1/} Secretary

Arrangements for the Ninth Annual Northeastern Corn Improvement Conference were made by Dr. H. L. Everett, Conference Chairman. The meetings were held in the North Room of the Henry Hudson Hotel in New York City.

AFTERNOON SESSION, FRIDAY, MARCH 12

The meeting was called to order by Chairman Everett at 1:10 p.m. The Chairman reviewed the various standing committees and their membership and asked committee chairmen when they would be ready to present their reports. At the suggestion of L. L. Huber it was agreed that committee reports be scheduled for the session on Saturday morning. It was hoped that this would allow time for committees to meet, discuss their business and prepare their reports.

The Chairman then called for brief summaries of the work in progress at the various cooperating experiment stations. These reports are arranged alphabetically by states and are briefly summarized below.

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Industry Station, Beltsville, Maryland.

STATION REPORTSCANADA

CENTRAL EXPERIMENT FARM, Ottawa

F. Dimmock indicated that the entire program at Ottawa is concentrated on early maturing strains. Hybrids similar to W275 are about the proper maturity. Yields of 90 to 125 bushels of shelled corn per acre are being obtained in Ottawa. Some work is being started on male sterility. Investigations now are in progress to determine the optimum plant densities for maximum acre yields. At the present time recommendations are for planting in 36 inch rows with about 14,500 plants per acre. Plant densities which yield about a half-pound ear per plant seem to give the best results.

CONNECTICUT

CONNECTICUT AGRICULTURAL EXPERIMENT STATION, New Haven

D. F. Jones indicated that investigations are in progress on cytoplasmic sterility and restorer genes. Restorer genes from six sources are being transferred to a number of inbreds ranging in maturity from early to late. Some inbred lines seem to carry genes capable of restoring fertility on all types of cytoplasmic sterility whereas others will restore fertility on some types but not on others. Experiments were conducted in 1953 in which male sterile and comparable male fertile counterparts of 36 different double crosses were compared for yield. As an average of all the comparisons a slight increase in yield was obtained from the sterile hybrids. Estimates indicate that at the present time some of the larger seed companies have about 20 percent of their seed production on sterile single crosses. Some of the newer Connecticut hybrids seem to be showing up very well in yield trials. The 1953 tests were harvested late and thus gave a good test on resistance to lodging. The single cross Oh45 x C103 seems to do very well in hybrids in Connecticut.

DELAWARE

DELAWARE AGRICULTURAL EXPERIMENT STATION, Newark

C. E. Phillips indicated that fertilizer trials with corn have been conducted for a period of three years, two of which have been very dry. These experiments have given some indication that applications of potassium may have an effect in reducing stalk rot. Data obtained on the five acre yield contests conducted in various parts of the State are being analyzed from the standpoint of fertilizer response.

MAINE

MAINE AGRICULTURAL EXPERIMENT STATION, Orono

The following report from Russell Bailey was read by the Chairman.

"Field corn investigation at the Maine Station is principally limited to the breeding and testing of grain types of the W240 season or earlier. Flint-dent combinations have consistently outyielded the early dent entries and are found to be 10 to 15 percent higher in protein and fat content. Two 3-way experimental flint-dents, 85 x 15 x SD105 and Mel3 x Mel6 x SD105, appear of local interest as a result of screening and cooperative farmer trials. Seed has been increased in pilot seed plots and a limited supply is available for distribution to those who wish to test them in small trials. Work is in progress in the attempt to develop early breeding stocks. Lines Q565, Q573, WD, W9, Msl341, A15, A96, C105, NH500, SD105, SD106, PI.196405, and PI.198042 have each been crossed with a very early sweet possessing desirable characteristics (PI185444). It is hoped that suitable early lines can be obtained by selection in later generations.

Sweet corn breeding is in progress. The most emphasis is devoted to a study of early processing types. Selected commercial hybrids and Maine experimentals were tested for yield and processing quality last season in cooperation with the Maine Cannery Association. A group of approximately 100 new lines are in the process of screening to determine if any have merit. Germplasm of several Maine line (Me 1, Me 2, Me 100, Me 135, and Me 244) is used in varying degrees in the production of commercial hybrids."

MARYLAND

MARYLAND AGRICULTURAL EXPERIMENT STATION, College Park

R. G. Rothgeb indicated that work is being conducted in Maryland on both sweet corn and field corn. Both projects stress the practical phases of the work. Corn Belt hybrids can be used very successfully for grain production in all regions of Maryland. A limited amount of inbreeding is under way in local varieties of dent corn but so far no inbred lines have been produced which surpass the better lines from the Corn Belt. Conn.870 has given good results in Maryland but there are some indications that under severe conditions Conn. 870 does not perform as well as U.S. 13. Tests indicate that about 14,000 plants per acre is the most suitable density for most conditions in Maryland but it may be desirable to go higher on some of the bottom land soils. The inbreeding work at College Park on sweet corn is more extensive than that on field corn. Sweet corn varieties for Maryland must be rugged and able to withstand adverse conditions.

PLANT INDUSTRY STATION, Beltsville

W. R. Findley, Jr., reported that work on breeding for resistance to leaf blights is being continued at Plant Industry Station. Since 1952 the experiments have been inoculated with Helminthosporium maydis as well as H. turcicum. A number of inbred lines of Ill. 448 maturity resistant to blight have been developed and seed of these was supplied to several experiment stations in the area to which they are adapted. Blight resistant strains have been developed for each of the four inbred parents of U. S. 13 and these will be compared in 3-way crosses in 1954. Several late maturing lines resistant to H. turcicum were crossed with R4 and Tr, advanced to the F₂ generation and populations of F₂ plants were grown in 1953 for classification. Wide differences were observed among the distributions of the blight ratings on the F₂ populations. Some of the blight resistant recoveries are being transferred to sterile cytoplasm. Both the Texas source and the Kys source of sterility are being utilized.

MASSACHUSETTS

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION, Amherst

H. Yegian reported that breeding work is under way to develop inbred lines from flint varieties. Massachusetts is particularly interested in early corn for grain production. There is need for hybrids a little later than Wis. 240 that will yield 80 to 90 bushels per acre. About 5,000 to 6,000 acres of early corn is grown annually within the State. Massachusetts 63 (W9 x W13) x (Mas.83 x NY3) is being grown to a limited extent in Massachusetts for both grain and silage. In general, corn seems to need a considerable amount of fertilizer on most Massachusetts soil if it is to give the best results.

EASTERN STATES FARMERS' EXCHANGE, W. Springfield

D. L. Matthews indicated that Eastern States Farmers' Exchange has been conducting performance trials with double crosses ranging in maturity from Wis. 240 to Conn.870. An effort is being made to improve the husking quality of hybrids. There seems to be an association between the point of origin of the innermost husks and clean husking. One inbred line has been found which has about 2 inches of space between the butt end of the ear and the first husk leaf on the ear shank. A sister line has about 1/4 inch between the ear butt and the first husk leaf. Normally the husks start immediately at the base of the ear. A little space between the ear butt and the innermost husk seems to favor cleaner husking. Plans are under way for initiating experiments on tolerance of corn strains to weed killers.

NEW HAMPSHIRE

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION, Durham

L. J. Higgins reported that the New Hampshire Agricultural Experiment Station has added a plant breeder to the staff and that he has undertaken to maintain the New Hampshire 500 variety. Yield trials with hybrids have been conducted since 1936. About 3/4 of the corn grown in New Hampshire is for silage. Silage trials have been conducted with stands ranging from 14,000 to 18,000 plants per acre on two levels of fertility and with different varieties. Wis. 355 has given yields of 14 tons per acre and Wis. 692 yields of 22 tons per acre. Normally Ohio M15 is about the latest hybrid that can be safely grown for silage. The season of 1952 was dry and 14,000 plants per acre gave slightly the best yield. Silage recommendations in the past probably have been for varieties which are a little too late to reach the best silage maturity.

NEW JERSEY

NEW JERSEY AGRICULTURAL EXPERIMENT STATION, New Brunswick

J. W. Collier indicated that the inbred line NJ47 has been outstanding for yield but very poor on resistance to root lodging. In an effort to correct this weakness NJ47 was crossed with NC7 which has particularly good roots. The F_1 cross was backcrossed to NJ47 and has since been selfed. The recovered strain has better roots than NJ47 but is later in maturing. Work is being continued to improve lines for resistance to stalk rot. Some work is under way at New Jersey on cytoplasmic sterility. There will be some seed production in 1954 of the hybrid NJ7 using cytoplasmic sterility. At the present time most of the hybrids grown in New Jersey are of U. S. 13 maturity but there is some farm demand for hybrids which will mature earlier.

R. S. Snell reported on the sweet corn work in New Jersey. Studies are being conducted on the effect of time of planting on the sugar content and texture of the crop. New Jersey experiments have indicated that better quality is obtained when the crop matures under cooler temperatures. These differences, however, are small in comparison with differences among varieties or among harvesting at different stages of maturity. Studies are being conducted on ear-to-row selection vs. convergent improvement for improving inbred lines for seed quality. Rapid improvement can be made with convergent improvement but this does not appear to be the case with ear-to-row selection. Considerable difficulty has been experienced in seed production of New Jersey sweet corn hybrids. An unduly high percentage of selfed plants of the seed parent have occurred in farmer fields. This probably has been due to poor detasseling of the seed parent. No good restorers have been identified in the commercially used sweet corn inbred lines. Sweet corn breeders are particularly anxious to use cytoplasmic sterility in production of hybrid seed.

NEW YORK

NEW YORK AGRICULTURAL EXPERIMENT STATION, Ithaca

R. G. Wiggins reported that a new series of backcrossed inbred lines now are ready for evaluation. Trials of regular and commercial hybrids are conducted each year. Since the introduction of hybrid corn in New York there has been an appreciable change in the proportion being grown for grain production. At the present time about 30 percent of the crop is grown for grain and there is particular need for early maturing varieties which dry out sufficiently well to be stored with safety. Some artificial dryers are being introduced into the area. If early hybrids can be produced which will ripen sufficiently for crib storage they will be preferred to the practice of artificial drying. Studies are being conducted on the storage of corn at different moisture contents. It is not possible to get corn as dry in the field under New York conditions as is the case in the Corn Belt. Studies are being conducted with experimental cribs 4 feet wide, 6 feet long and 8 feet high which hold enough ear corn to produce 100 bushels of shelled grain. These entire cribs can be weighed to determine shrinkage. The experiments include the storing of corn with 25, 30 and 35 percent moisture. It is seldom that corn in New York will contain less than 25 percent moisture at the time of crib storage. Much of the corn now stored in cribs in New York will keep safely if the cribs are sufficiently narrow and favorably located for ventilation. Experiments also are in progress to measure the improvement resulting from the use of modern methods of corn breeding. Cornell 11, one of the best open pollinated varieties grown in New York prior to the advent of hybrid corn, is being used as a standard. In comparative trials conducted in only one year the present hybrids outyielded Cornell 11 by 30 to 35 percent.

H. L. Everett reported on additional studies in progress in New York. He is investigating the possible usefulness of short lines, mostly developed from brachytic. He thinks there may be some possibility of utilizing such strains, particularly because of their standing ability. Several of the New York inbred lines are being transferred to sterile cytoplasm. NY16 seems to carry a good restorer and NY3 a partial restorer. Cornell M4 (Oh51A x B8) x (NY3 x D50) is being prepared for seed production utilizing cytoplasmic sterility.

BROOKHAVEN NATIONAL LABORATORY

W. R. Singleton indicated that mutation studies are being continued utilizing gamma radiations in a 10-acre experimental field with a radiation source of 2000 curies. Experiments have been conducted to determine the most efficient use of the radiation source to produce the best results. Present evidence indicates that a maximum number of mutations are produced when the plants are irradiated about two days before pollen is shed.

This probably is about the time the generative nucleus is dividing. Utilizing this information, the present plans are to grow corn plants in pails and treat them at the optimum time to produce mutations. The work in progress also includes experiments utilizing the thermal neutrons from the thermal pile and ultraviolet. Thermal neutrons are absorbed selectively and several cases of increased disease resistance in oats have been obtained following radiations with thermal neutrons. Similar experiments are in progress in field corn utilizing the parents of U.S.13 and several other inbred lines. In these experiments pollen is treated and then applied to the inbred line. The seed thus produced will be subjected to disease tests to search for possible mutations affecting resistance to Helminthosporium turcicum.

OHIO

OHIO AGRICULTURAL EXPERIMENT STATION, Wooster

G. H. Stringfield indicated that in experiments comparing the yields obtained from heavy and from light seeds from the central portion of corn ears the heavy seeds have given plants with increased vigor. In comparisons of backcrosses and F_2 generations the backcrosses again were more vigorous in trials conducted in 1953. Work in transferring the standard inbred lines used in Ohio to sterile cytoplasm is being conducted by the Ohio Seeds Stocks Organization. Sufficient seed is available of sterile singles for about half of the double cross seed production in Ohio for 1954. The sterile strains in use have shown very high sterility in the greenhouse as well as in Florida. Some work is in progress on the isolation and identification of restorer genes. The open-pollinated variety Woodburn was sampled and found to carry an appreciable number of restorers. Restorer genes are being transferred to some of the commercial inbred lines along with sterile cytoplasm. Studies are being continued on different widths of row spacings along with interplantings of winter wheat and legumes. Resistance to blackbirds is of considerable importance along Lake Erie and in some of the river bottoms in Ohio. Breeding for bird resistance was initiated several years ago with Corn Belt material but southern material has more recently been included in the experiments. The single cross W22 x Oh28 has some bird resistance. Good lines in the other parent of doubles involving this single can reduce bird damage about 25 percent. Present breeding work in Ohio is concentrated on the improvement of a relatively few lines. There is some interest in double crosses involving singles between related lines as Oh43 x Oh45, for example. Such double crosses approach single crosses in performance and may continue in limited demand at premium prices.

PENNSYLVANIA

PENNSYLVANIA AGRICULTURAL EXPERIMENT STATION, State College

L. L. Huber indicated that work is under way with cytoplasmic sterility and that several Pennsylvania lines are being transferred to sterile cytoplasm. A short season nursery is being established at about 1400 foot elevation for use in the development of early-maturing lines and hybrids. Hybrid-fertilizer studies have been conducted since 1945. As a result of these experiments farmers have increased plant populations per acre. These experiments also have demonstrated differences among the hybrids in resistance to crowding. Some lines and some hybrids differ in their mineral accumulation, magnesium for example. Present evidence also indicates that inbred lines differ in their response to soil acidity. Plant population tests are being conducted at 12,000, 15,000, 18,000 and 21,000 plants per acre with different amounts of fertilizer plowed down. From this work it has been concluded that it is a waste of time to evaluate hybrids at the lower populations of plants per acre. Present practice is to use 16,000 plants per acre when hybrids are compared at only one density of planting. Some evidence that inbred lines differ in their water requirements and that such differences are related to the amount of crowding the hybrids can tolerate. Lower water requirements may be related to resistance to aphids and to some other insects. Dr. Huber thinks we have neglected to put enough emphasis on studies of water requirements of inbred lines and that any reduction in water requirement of the parental lines is likely to improve the performance of the hybrid. Plans are being made to compare the inbred lines on soils with low water holding capacity in order to evaluate them for drought tolerance. For efficient selection it would be desirable to identify some symptom closely correlated with poor water requirements. There has been some evidence in Pennsylvania experiments to indicate that missing kernel rows on the ear may indicate poor drought tolerance. The major concern of the Pennsylvania corn project at the present moment is the evaluation of the water requirements of inbred lines and hybrids.

C. C. Wernham reported on the corn disease work at the Pennsylvania State University. This work at present consists of four phases: (1) a backcross program with material of U.S. 13 maturity to improve its cold reaction and H. maydis resistance; (2) selfing down blight resistant selections from previous years; (3) crossing to incorporate stronger root systems into blight resistant selections and (4) selecting from early O.P. varieties the disease resistant entities. Cold testing and other disease work done under field conditions.

An excessively wet spring in 1953 was followed by an exceedingly dry summer. Many plants failed to produce ears. Only those plants producing ears 6" or more in length and having other desirable characters were saved. Inoculations with Helminthosporium turcicum were a failure

even on Haney (Minn. 13) checks. H. maydis however soon took over the nursery and remained in epiphytotic proportions throughout the season. Stewart's disease was remarkably absent in S_1 and S_2 cultures although nearby corn fields were severely affected. The following H. maydis responses were shown with respect to plant maturity.

<u>Seedling</u>	<u>8-10 leaf stage</u>	<u>Post silking</u>	
resistant	resistant	resistant	(few)
resistant	susceptible	susceptible	(few)
susceptible	resistant	resistant	(vast)
susceptible	susceptible	susceptible	(majority)

For the North East H. maydis inoculations should be made at the 8-10 leaf stage.

Forty-three 0.5's and 98 1.0's (for H. turcicum) representing S_1 and S_2 selections from our 1952 nursery gave the following distribution in Georgia where seedling blight is the rule.

		Distribution of 1952 cultures by Georgia ratings 1953						Total
		0.5	1.0	1.5	2.0	2.5	3.0	
State College ratings 1952	(0.5	7	12	12	9	2	1	43
	(1.0	7	29	36	17	3	6	98

Three blight resistant synthetics of field corn were produced in 1953. For this purpose the S_1 , S_2 and S_3 cultures of maize resistant to Helminthosporium turcicum and H. maydis were divided on the basis of maturity into early, intermediate and late lots. Fifty-seed samples of each culture were mixed for isolation block planting. The late lot was grown in isolation by Dave Matthews, Eastern States Farmers' Exchange, at Feeding Hills, Massachusetts. The early and intermediate lots were grown side by side in an isolation block at State College, Pennsylvania.

From each open-pollinated lot two samples were taken: (a) 100 ft. of row and (b) selection among the better plants for root, stalk and ear characters. Small amounts of seed are available to interested workers. It is planned to carry the early and intermediate lots through a second open pollinated generation and to distribute the synthetics through the Foundation Seed Stocks Program.

In the 1954 season the Synthetic OP_1 will be used to top cross S_1 , S_2 and S_3 material from the 1953 nursery for yield trial in 1955. Remnant seed of high yielding material will re-enter the disease nursery in 1956 for further selection.

PENNSYLVANIA FARM BUREAU, Harrisburg

D. R. Butler indicated that the Pennsylvania Farm Bureau operates only in Pennsylvania. The Farm Bureau breeding program is being integrated with the breeding program of the Pennsylvania Agricultural Experiment Station. The Farm Bureau is particularly interested in the grading qualities of different single crosses and also is studying the effect of plant density on grading qualities. Studies with WF9 x Hy indicated that the maximum yield of flat seed was obtained at 10,000 plants per acre. Another single cross gave a higher yield of flat seed at 8,000 plants per acre than at 14,500 plants per acre. Seed quality was found to increase directly with ear weight.

WEST VIRGINIA

WEST VIRGINIA AGRICULTURAL EXPERIMENT STATION, Morgantown

W. L. Haltiwanger indicated that work is in progress to develop inbred lines adapted to high altitudes from local open-pollinated varieties. The present nursery is located at 1,000 feet elevation. Wisconsin and Minnesota lines are shorter and less vigorous than desirable for growing at the higher elevations. The question of utilizing synthetics in this area rather than double crosses is being considered.

DISCUSSION OF MUTATION AND MAIZE BREEDING

W. R. Singleton reported on the investigations at Brookhaven National Laboratory on the induction of mutations in corn. A radiation field was set up with a central source of continuous radiation. The first year only a small source of 16 curies was available. Daily radiations received by the plants ranged from about 5r to 50r. The mutation rates obtained were 100 or more times the rates established by Stadler for mutations in the egg. The latter rates are as follows:

R	492 per 10^6
I	100 " "
Pr	11 " "
Su	3 " "
Sh	2 " "
Wx	0 " "

The experiments indicate that the mutation rate in the male is much higher than in the female. This difference may be associated with differences in the developmental cycle of the microspore and megaspore. The experiments in progress in the radiation field involve the dominant genes R, Sh, Pr and Su. The multiple recessive is used as seed parent and is carefully detasseled to avoid contamination.

Tests of radiations at various stages during the growing season indicate that the maximum mutation rate in the pollen is obtained from treatments about two days before pollen shedding. Maximum pollen damage from treatment, however, occurs much earlier.

The experiments indicate that radiation treatments will enormously increase the mutation rate. It also has been demonstrated that radiations will induce variability in any inbred line. This should provide opportunity for selection.

Present tests at Brookhaven involve efforts to obtain mutations affecting disease resistance in W9, 38-11, Hy, Tr, R4 and M14. The experiments so far have been concerned mainly with mutations from dominant to recessive. This rate may be quite different from that of recessive to dominant.

Meeting adjourned at 5:30 p.m.

EVENING SESSION, FRIDAY, MARCH 12.

A banquet was served in the North Room of the Henry Hudson Hotel at 6:30 p.m. Following the banquet Chairman Everett turned the chair over to C. C. Wernham, the new Chairman for the ensuing year.

M. T. Jenkins reported on activities at the Seventh FAO Hybrid Maize Conference held in Belgrade, Yugoslavia, February 8-13, the Eleventh Southern Corn Improvement Conference, held in Miami, Florida, February 16-18, and the Fourteenth North Central Corn Improvement Conference held in Chicago, Illinois, March 4-5. Major discussions at each of these conferences were concerned with policies regarding the release of inbred lines of corn and action was taken at each conference to liberalize present policies on release.

D. F. Jones reported on his trip to the Genetics Congress at Bellagio, Italy and exhibited a number of Kodachrome slides taken on the trip.

Chairman Wernham next called on L. L. Huber to act as chairman of a meeting as a Committee of the Whole for discussion of plans for the uniform trials. No seed was prepared for uniform trials in 1954. General plans for uniform trials in 1955 were discussed and it was generally agreed that inbred lines would be compared in 3-way crosses rather than all-combination sets of single crosses.

Meeting adjourned at 11:30 p. m.

MORNING SESSION, SATURDAY, MARCH 13

The meeting was called to order by Chairman Wernham at 9:10 a.m. Dr. Wernham called for the report of the Committee on Sweet Corn Investigations. The Committee report presented by R. S. Shell follows:

Report of the Committee on Sweet Corn Investigations

Sweet corn hybrids were submitted by Maine and New Jersey in 1953. Seed supplied by Maine included Mel00 x Mel4 x He2rt, Mel4 x He2rt and Me5052. New Jersey submitted seed of NJ103, NJ106, and NJ112.C13.

Five stations; New Jersey, Maryland, Delaware, Maine, and New York reported on the performance of the exchanged hybrids. The composited summary is presented below in table 1.

New Jersey and Maine reported limiting drought conditions. In addition, New Jersey and Maryland reported severe bacterial wilt, while New York had a light incidence of this disease.

Table 1. Compositd data and observations from Five Northeastern State Experiment Stations on the performance of exchanged sweet corn hybrids in 1953.

Hybrid	Diff. in days to $\frac{1}{2}$ silk (1)	Av. Ht. (ins) (2)	Yield (3) score	Ear length (ins) (1)	Ear diam. (ins) (1)	No. kernel rows (2)	Flavor score (2)	Tender- ness score	Death by wilt (%) (5)	Leaf blight score (3)
Me 5052	0	60	4*	7.5	1.70	8-10-12-14	3*	4*	51	5*
Mel00xMelxMe2rt	+4	70	3	8.0	1.60	12-14-16	2	2	33	4
MelxMe2rt	+4	70	4	7.8	1.54	12-14	1	1	70	4
NJ12.C13	+4	66	2	7.5	1.70	8-10-12	3	3	6	2
NJ106	+5	72	2	7.8	1.85	10-12-14	4	3	6	2
Carmelcross	+5	63	2	7.5	1.80	12-14	2	3	--	2
NJ103	+9	75	1	7.8	1.75	12-14-16	2	2	7	3
Golden Cross	+11	80	2+	8.0	1.78	12-14	2	2	28	3

* Score of 1 is most desirable; 5 least desirable.

(1) Me., N.J., Md., N.Y. (2) Me., Del., N.J., Md., N.Y. (3) Md., N.J., N.Y.
 (4) N.J., Del., N.Y. (5) Md.

Chairman Wernham again called on L. L. Huber to act as Chairman for a meeting as a Committee of the Whole to complete arrangements for the uniform tests. The arrangements agreed upon for the production of test crosses for comparisons in 1955 are outlined below:

Uniform Tests of 900 Maturity

No uniform tests of this maturity were scheduled and no arrangements were made for seed production.

Uniform Tests of 800 Maturity

These tests will consist of 3-way crosses with WF9 x Hy and WF9 x Oh07 as uniform tester parents. Seed will be produced by J. W. Collier in New Jersey and R. G. Rothgeb in Maryland. Two packets of 50 seeds of the inbred lines to be included in this test are to be sent to J. W. Collier, Committee Chairman at New Brunswick, New Jersey prior to April 15.

Uniform Tests of 700 Maturity

These tests will consist of 3-way crosses made with WF9 x Oh43 and WF9 x Hy as testers. Seed of these crosses will be produced by D. F. Jones in Connecticut and L. L. Huber in Pennsylvania. Two packets of 50 seeds of each inbred line to be included in this test are to be sent to J. W. Collier, Committee Chairman at New Brunswick, New Jersey prior to April 15.

Uniform Tests of 600 Maturity

No seed will be produced this year for uniform trials of this maturity.

Uniform Tests of 500 Maturity

The entries in these tests will consist of 3-way crosses made with Oh51A x B8 and Pa54 x Pall as tester parents. The test crosses will be produced by H. L. Everett in New York and D. L. Matthews of Eastern States in Massachusetts. Two packets of 50 seeds of each inbred line to be entered in these tests are to be mailed to L. L. Huber, Committee Chairman at State College, Pennsylvania prior to April 15.

Uniform Tests of 400 Maturity

The entries in these tests will consist of 3-way crosses made with NY3 x Q83 and Pa54 x Pall as tester parents. Seed of these crosses will be produced by H. L. Everett in New York and H. Yegian in Massachusetts. Two packets of 50 seeds of each inbred line to be entered in these tests is to be sent to H. L. Everett, Committee Chairman at Ithaca, New York before April 15.

Uniform Tests of the 200 and 300 Maturities

The entries in the tests of these maturities will consist of top crosses made with the early strain of Cornell 11. Seed will be produced by H. L. Everett in New York and D. L. Matthews in Massachusetts. Two packets of 150 seeds of each of the inbred lines to be entered in these tests are to be mailed to H. L. Everett, Committee Chairman, at Ithaca, New York prior to April 15.

Committee Chairmen will distribute seed of the inbred lines to the stations where seed of the test crosses is to be produced and will also supply seed of the single crosses to be used as tester parents.

Following the above discussions L. L. Huber turned the meeting back to Chairman Wernham for discussions of special topics.

Uniform Tests of Double Crosses

L. L. Huber, Chairman of the Committee on Uniform Tests of Double Crosses, indicated that no uniform tests of doubles had been arranged for the coming season.

D. F. Jones, Chairman of the Committee on the Registration of Eastland Hybrids, indicated that no hybrids had been nominated for Eastland designations.

The question of organizing the uniform tests of doubles in such a manner that the promising new doubles would be eligible for Eastland designations was discussed. No final arrangements were made for this purpose.

L. L. Huber suggested Pa775 (WF9 x Pa86)(Oh43 x Pa70) and Pa525 (WF9 x Oh51A)(Pa54 x Pall) as candidates for Eastland designations. He offered to supply seed of these two hybrids to any station interested in testing them. It was suggested that Pa775 be compared with U. S. 13 or Iowa 4059 and that Pa525 be compared with OhM15.

D. L. Matthews raised the question as to the releasing of inbred lines developed by Eastern States Farmers Exchange. It was suggested that when such lines are released they should be distributed through the Experiment Station in the State concerned. In this connection it was mentioned that lines developed by the Pennsylvania Farm Bureau now are assigned Pennsylvania designations by the Pennsylvania Agricultural Experiment Station.

This arrangement seemed to be generally agreeable provided the Experiment Station concerned was willing to accept the lines and take on the duties associated with distributing seed of them.

DISCUSSION OF STALK ROT-FERTILIZER RELATIONS

Harley Otto discussed an experiment conducted at Aurora, New York in 1953. The experiment involved six hybrids, two levels of potash and three levels of nitrogen. Data were obtained on yield, the percentage of plants with stalk rot and percent of plants with smut. The data from the experiment are shown in table 2 and the statistical analysis of the data in table 3.

Table 2. Yield, Stalk Rot and Smut Reactions of 6 Corn Hybrids at Different Levels of Potassium and Nitrogen Fertilization
Aurora, New York - 1953

Hybrid	Pounds Potassium Per Acre	Pounds Nitrogen Per Acre												Mean
		0				50				120				
		Yield	'Rotted 'Plants	'% Smutted	'Yield	'Rotted 'plants	'% Smutted	'Yield	'Rotted 'plants	'% Smutted	'Yield	'Rotted 'Plants	'% Stalk'	
Ohio 26 x Ohio 51	0	72.0	12.82	0.57	86.5	32.85	0.32	78.8	25.43	0.35	79.1	23.70	0.41	
	200	82.6	8.03	1.03	84.3	8.53	0.92	86.7	6.93	2.25	84.5	7.83	1.40	
											81.8	15.92	0.91	
Ill. A x Wisc. W23	0	71.9	80.58	0.67	68.6	94.75	3.75	72.3	81.95	2.82	70.9	85.76	2.41	
	200	84.0	92.62	2.68	80.7	83.12	2.25	75.5	82.10	2.37	80.1	85.95	2.43	
											75.5	85.85	2.42	
N.Y. 3 x N.Y. 4	0	65.1	56.03	29.75	72.3	73.70	47.18	71.1	65.30	39.28	69.5	65.01	38.74	
	200	93.7	48.67	42.32	94.6	48.17	44.15	92.2	48.07	46.42	93.5	48.30	44.30	
											81.5	56.66	41.52	
N.Y. 2 x N.Y. 1	0	57.7	43.42	0.63	74.5	47.17	2.87	66.8	52.70	4.32	66.3	47.75	2.61	
	200	81.7	28.45	0.87	81.2	23.78	2.50	90.5	29.52	3.25	84.5	27.25	2.21	
											75.4	37.50	2.41	
Ohio 51A x Iowa B8	0	78.1	9.78	0.32	87.8	18.83	0.93	81.3	10.90	1.33	82.4	13.17	0.86	
	200	91.4	0.58	0.93	93.1	4.77	1.25	86.3	3.93	0.68	90.3	3.09	0.95	
											86.3	8.13	0.91	
N.Y. 3 x Idaho D50	0	69.0	40.47	13.82	69.0	67.92	27.50	71.5	50.82	22.76	69.8	53.07	21.36	
	200	76.2	18.32	13.42	86.1	33.82	22.78	83.2	24.37	27.25	81.8	25.50	21.16	
											75.8	39.28	21.26	
N.Y. 3 x N.Y. 4 (Not Inoculated)	0	73.5	65.33	29.68	73.5	52.27	53.27	70.1	67.08	48.63	72.4	61.56	43.86	
	200	92.4	36.72	52.25	96.5	44.43	51.62	94.6	41.27	45.52	94.4	40.82	49.80	
											83.4	51.18	46.83	
Mean	0	69.6	44.06	10.78	76.0	55.33	19.41	73.1	50.60	17.07	72.9	50.00	15.75	
	200	86.0	33.47	16.21	88.1	35.23	17.02	87.0	33.74	18.25	87.0	34.16	17.19	
Mean		77.8	38.76	13.50	82.0	45.28	18.22	80.0	42.17	17.66	80.0	42.08	16.61	

Table 3. Analysis of Variance of corn hybrid - fertilizer trial.
Aurora, New York - 1953

Source of variation	d.f.	Yield		Stalk Rot		Smut		F values required for significance		
		Variance	Value	Variance	Value	Variance	Value	5%	1%	
Between fertilizers	5	2,699.52	5.74	3,723.74	4.94	391.73	5.79	2.60	3.86	
Between Nitrogen levels	2	376.60	<1	895.29	1.19	631.18	9.33	3.38	5.57	
Between Potassium levels	1	12,544.78	26.66	15,842.87	21.03	184.29	2.72	4.24	7.77	
N x K	2	99.81	<1	492.63	<1	256.00	3.91	3.38	5.57	
Between Replications	5	402.06	<1	3,668.74	4.87	545.39	8.06	2.60	3.86	
F x R	25	470.60		753.39		67.64				
Between Hybrids	6	696.06	5.55	24,462.10	112.13	14,706.56	224.73	2.16	2.92	
H x F	30	171.04	1.36	318.06	1.46	97.64	1.49	1.54	1.83	
Error b	180	125.42		218.15		65.44				

D. L. Matthews raised a question regarding cooperative purchasing of glassine shoot bags. It was

MOVED: That a committee be appointed to investigate the matter with Eastern States Farmers' Exchange.

Seconded and passed.

Chairman Wernham appointed the following committee:

R. S. Snell
H. L. Everett
D. L. Matthews, Chairman

A nominating committee consisting of R. G. Wiggans, Chairman, D. F. Jones and H. Yegian also was appointed by Chairman Wernham and instructed to select a candidate for Vice Chairman of the Conference for the ensuing year. The Committee also was asked to make recommendations on the time, place and kind of program desired for the next meeting.

DISCUSSION OF CORN DISEASES

C. C. Wernham presented data on the relative susceptibility of several inbred lines to crazy top and on the inheritance of target spot. These data are presented in detail in the Maize Genetics Cooperation News Letter 28:29-30, 1954. The data on crazy top indicate that there are heritable differences in susceptibility to the disease. Target spot seems to be inherited as a monogenic recessive, although there was a consistent deficiency of target spot plants.

C. W. Boothroyd reported observations on a river bottom field of Wis. 531 in which about 50 percent of the plants had crazy top. The field had been flooded when the plants were young. An upland planting of the same seed contained no plants with crazy top.

DISCUSSION OF WEED CONTROL

The use of 2,4-D for weed control in corn breeding nurseries was discussed briefly. There seems to be abundant evidence that inbred lines differ in their reaction to 2,4-D. There was some sentiment in favor of treating breeding nurseries with 2,4-D and discarding susceptible strains. This practice should tend to develop resistant strains. The question was raised, however, as to how long 2,4-D would continue to be used on corn. Severe damage was reported to corn in Pennsylvania from 2,4-D treatments in hot, dry weather on stony soil. Ohio recommends that 2,4-D should not be applied during hot humid weather nor for a few days after such weather. In Delaware 2,4-D ester is not recommended for corn.

REPORT OF THE NOMINATING COMMITTEE

Chairman Wiggans reported that the Committee nominated R. S. Snell as Vice Chairman. Dr. Snell was elected unanimously.

Chairman Wiggans also reported that the Committee recommended that the 1955 meeting of the Conference be held in New York City during the first 15 days of March. It was

MOVED: That the Committee recommendations for the time and place of the next meeting be approved.

Seconded and passed.

The nature of the program for the next meeting was discussed. Following these discussions it was

MOVED: That the meeting be a work planning conference with the development of plans for cooperative work for the following season as the first order of business. Additional time above that required for work planning might be devoted to the discussion of timely topics.

Seconded and passed.

Meeting adjourned at 11:45 a.m.

OFFICERS AND COMMITTEE MEMBERSHIP, 1954

Referee - A. J. Heinicke

Executive Committee

Chairman	C. C. Wernham
Vice Chairman	R. S. Snell
Member-at-large	H. L. Everett
Secretary	M. T. Jenkins

Committee on Uniform Tests of Double Crosses

L. L. Huber, Chairman
B. F. Coon
H. L. Everett
C. W. Haenseler
R. S. Wiggans

Committee on the Registration of "Eastland" Hybrids

D. F. Jones, Chairman
L. L. Huber
R. G. Rothgeb

Committee on Sweet Corn Investigations

D. W. Barton, Chairman
R. G. Rothgeb
R. M. Bailey
W. H. Lachman
M. T. Lewis
W. R. Singleton
R. S. Snell

Committee on Statistical Designs for the Uniform Comparisons

C. E. Phillips, Chairman
C. I. Bliss
H. M. Yegian

Committee on Uniform Tests of Field Corn Inbreds

L. L. Huber, Chairman
C. H. Haenseler
R. G. Wiggans

Committee on Uniform Tests of 200 Maturity

H. M. Yegian, Chairman
R. M. Bailey

Committee on Uniform Tests of 300, 400 and 500 Maturities

L. L. Huber, Chairman
R. G. Wiggans
H. M. Yegian

Committee on Uniform Tests of 600 and 700 Maturities

D. F. Jones

Committee on Uniform Tests of 800 and 900 Maturities

J. W. Collier, Chairman
R. G. Rothgeb

LIST OF NORTHEASTERN EXPERIMENT STATIONS

Connecticut
Delaware
Maine
Massachusetts
Maryland
New Hampshire

New Jersey
New York
Pennsylvania
Rhode Island
Vermont
West Virginia

ROSTER OF ATTENDANCE

Canada

Dimmock, F.

Central Experiment Farm

Ottawa

Connecticut

Jones, D. F.

Connecticut Agri. Expt. Station

New Haven

Delaware

Phillips, C. E.

Delaware Agri. Expt. Station

Newark

Indyk, H. W.

" " " "

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Maryland

Jenkins, N. T.

U.S.D.A., Plant Industry Station

Beltsville

Findley, Wm. R., Jr.

" " " "

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Rothgeb, R. G.

Maryland Agri. Expt. Station

College Park

Massachusetts

Yegian, H. M.

Massachusetts Agri. Expt. Station

Amherst

Matthews, D. L.

Eastern States Farmers' Exchange

W. Springfield

New Hampshire

Higgins, L. J.

New Hampshire Agri. Expt. Station

Durham

New Jersey

Ahlgren, G. H.

New Jersey Agri. Expt. Station

New Brunswick

Collier, J. W.

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Schoelock, D. F.

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Snell, F. S.

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Shull, G. H.

Princeton University

Princeton

New York

Anderson, R. E.

New York Agri. Expt. Station

Ithaca

Boothroyd, C. W.

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Everett, H. L.

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Otto, H. J.

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Wiggans, R. G.

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Caspar, I.

Brookhaven Nat'l Laboratory

Upton, L.I.

Singleton, W. R.

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Ohio

Stringfield, G. H.

U.S.D.A. & Ohio Agri. Expt. Station

Wooster